FOR PUBLICATION

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS
DIVISION OF ST. CROIX

GOVERNMENT OF THE VIRGIN ISLANDS,	)	**CRIMINAL NO. 287/2001**
Plaintiff,	)	**Negligent Homicide; Involuntary Manslaughter; Reckless Driving;**
v.	)	**Operating a Motor Vehicle Without an Operator's License;**
KAI JACKSON,	)	**Operating a Motor Vehicle Without Proof of Liability**
Defendant.	)	**Insurance**

COUNSEL:

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Ross, Edgar D., Judge

Memorandum Opinion

(Filed: July 6, 2005)

THIS MATTER came before the Court as a result of Defendant's motion for a *Daubert* hearing. The Defendant challenged the formulas used in determining the rate of speed the Defendant was traveling on the date of the incident. Accordingly, on February 22, 2002, a *Daubert* hearing was initiated on the matter.

Factual Background

On May 3, 2001, while traveling west on Melvin Evans Highway, in the vicinity of the Paradise Housing Community, Defendant was involved in an incident where his vehicle struck and killed a pedestrian attempting to cross the highway. The pedestrian was pronounced dead at the scene. Thereafter, Officer Joseph Bess conducted a speed test to determine the rate of speed at which the Defendant was traveling prior to braking. In order to determine the rate of speed, Bess used the following formulas:

(1) Coefficient of Friction ("f")= Pulling Force ("F")/Weight of Drag Sled (W") ("f=F/W"); and
(2) Speed in Miles per Hour ("S")=Square Root of the Constant 30 multiplied by the Distance in feet ("D"), multiplied by the Coefficient of Friction ("f"), multiplied by the percentage of breaking ("N") ("S=√30(D)(f)(N)").

Defendant moved for a *Daubert* hearing challenging the validity of the formulas used to determine the Defendant's rate of speed, and the Court complied.

Expert testimony was presented on both formulas by David Brill, an accident investigation coordinator and instructor at the University of Florida's Institute of Police Technology and Management. Brill is also a former homicide investigator for the Florida Highway patrol and a published author in the field of traffic accident investigation and reconstruction. Brill was qualified by this Court as an expert to testify regarding the reliability of the coefficient of friction and speed tests based on his knowledge, skill, experience, professional training and education.

Standard of Review

The admission of scientific or expert evidence is governed by Fed. R. Evid. 702. Accordingly, the Court may exercise broad discretion in excluding or admitting scientific evidence. *Kumko Tire Co., Ltd. v. Carmichael*, 526 US 137 (1999). However, before expert

testimony or scientific evidence may be admitted, the Court must act as a gatekeeper and determine what evidence helps the jury to resolve the issues presented. *See Government of the Virgin Islands v. Byers*, 35 VI 240, 941 F.Supp. 513 (DVI, 1996); *Daubert v. Merrill Dow Pharmaceuticals*, 509 U.S. 579 (1993).

The Supreme Court has established a two-prong test to determine the validity and admissibility of scientific evidence. The scientific evidence must be both relevant and reliable. Relevance satisfies the helpfulness standard as determined by the trial court under the guidance of rule 702, and reliability requires a detailed inquiry into the methodology used to form the expert's conclusion. This inquiry ensures that the methodology is grounded in good science based on more than mere "subjective belief or unsupported speculation." *Belofsky v. General Electric Co.*, 980 F.Supp. 818, 821 (DVI 1997).

In *Daubert,* the Supreme Court identified five nonexclusive factors to be weighed by the Court when determining scientific reliability:

(1) whether the theory or technique can be tested;
(2) whether the methodology is subject to peer review and publication;
(3) whether, and how frequent, the methodology leads to erroneous results;
(4) the known or potential rate of error; and
(5) whether the theory or technique has been generally accepted in the relevant scientific field. *Daubert*, 509 U.S. at 593.

In creating these standards, the *Daubert* Court required trial courts to consider the above factors in their totality. *Daubert*, 509 U.S. at 593. No one factor is dispositive. As such, the Court's inquiry must focus solely on principles and methodology, not on the conclusions generated therefrom. *Daubert*, 509 U.S. at 595.

In addition to the five factors set forth in *Daubert*, the Third Circuit Court of Appeals has appended three more factors to be considered when determining scientific reliability:

1) whether, and how strong, a relationship the technique has to methods which have been established as reliable;
2) whether the expert witness is qualified to testify based on the methodology; and
3) whether, and how often, the method has been put to non-judicial use. *Byers*, 35 VI at 246, 941 F.Supp. at 516.

The Government bears the burden of proving by a preponderance of the evidence that the challenged methods meet the standards for admission of scientific evidence. *See Belofsky* at 822.

Analysis

The formulas used by Officer Bess in the accident reconstruction are derived from or rooted in Newton's Second Law of Motion. *See* Transcript Vol. I at 17. Brill testified that the formulas have been subjected to testing, and have also been subjected to peer review and publication through the Association of Automotive Engineering. *See* Transcript Vol. I at 33. Brill testified as to the wide acceptance of the formulas throughout the field of accident reconstruction. *See* Transcript Vol. I at 34. The formulas are used by the Association of Engineers, General Motors, Ford and other car manufacturers, NASA, and the V.I. Department of Transportation. *See* Transcript Vol. I at 37. The formulas are also routinely used in the construction of roads and highways. *See* Transcript Vol. I at 39. Brill further testified that "[e]ach of these formulas is dependent upon the training at which this officer undergoes and how meticulous he is to his duties." Transcript Vol. I at 35. "The only area that can be subjected to error is the data you submit to them for calculation." Transcript Vol. I at 36.

Defendant's objections to the formulas focus on the nature of the error rates in the speed formula. However, these objections cannot be directed at the error rate of the underlying formulas. According to Brill's testimony, if the calculations are performed correctly, the speed can be determined within a high degree of scientific certainty. Defendant presented no evidence on the contrary to this point. Errors occur if the specific officer investigating the accident

incorrectly determines the values for the variables in the equation. Officer Bess used the drag sled method to determine the value for the coefficient of friction (*f*). The drag sled method is a valid method that is taught at the Institute of Police Technology. *See* Transcript Vol. I at 28. The potential for error is created only if the investigating officer improperly collects the data. *See* Transcript Vol. I at 36. The test itself, when performed properly, is both valid and reliable.

Defendant also objected to the value that Officer Bess used for the percentage of braking (*N*). Braking efficiency is the amount of weight distribution on the axis of the vehicle. *See* Transcript Vol. II at 66. The 60% value used by Bess was based on the assumption that the two front tires support 60% of the car's weight and that the rear supports 40% of the car's weight. *See* Transcript Vol. II at 67. Brill testified that this distribution is based on the automobile manufacturing specifications for most passenger vehicles. *Id*. Depending on the vehicle, the weight distribution ratios range from 57% front, 43% rear to 63% front, 37% rear. *Id*. Therefore, while the most accurate method of calculating the actual percentage of braking is to weigh the vehicle, the 60/40 representation is within the acceptable standards used by the Institute of Police Technology for determining braking efficiency. *See* Transcript Vol. II at 68.

Defendant also challenges the measurement of the skid marks. When measuring skid marks, there is a shadow that starts at the point at which the driver applies the brakes and ends at the point where the brakes lock and the car starts skidding. *See* Transcript Vol. II at 60. This shadow appears just before the distinct black skid mark starts. *Id*. According to Brill's testimony, the standard in the scientific community for measuring skid distance is to include the shadow, and that officers are trained to recognize the shadow and include it in the measurement of the skid mark. *See* Transcript Vol. II at 60. There is always a portion of the shadow that

cannot be detected which could comprise 8 to 12 percent of the skid mark. *See* Transcript Vol II at 64.

Conclusion

The scientific testimony offered by Brill, an expert in the field accident investigation and reconstruction, is both relevant and reliable. The Government of the Virgin Islands has satisfied each of the *Daubert* factors, and each of the factors established by the Third Circuit Court of Appeals, in demonstrating scientific reliability. The underlying theory behind these formulas is well grounded in the fields of mathematics and physics. The techniques used to determine the value of the variables in the formulas, when performed correctly, yield results that are accurate within a high probability of scientific certainty. The formulas and methodology used by Officer Bess have been established as reliable throughout the scientific community. The Government has proven by a preponderance of the evidence that the challenged methods meet the standards for the admission of scientific evidence. As such, the Court finds that the use of the speed formulas, and the formulas used to determine the values of the variables in the speed formula, may be admitted into evidence in the trial on this matter. The jury may properly hear testimony on the formulas, as the testimony will assist the trier of fact in determining the Defendant's speed at the time of the incident.

Dated July 26, 2005

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Edgar D. Ross
Territorial Court Judge

Attest:
Denise D. Abramsen
Clerk of the Court

By: _____
Deputy Clerk